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**(56) Documents cited**

**GB 1444343**

**GB 1442424**

**GB 1222908**

**(58) Field of search**

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**(54) Improvements in self-supporting moulded furniture frames for upholstered furniture**

(57) A self-supporting moulded furniture frame for a settee or armchair is formed with rails 13, 15, 17, 19 located therein during moulding of the frame and to which are attached elongated flexible members 25, 27, such as sinuous springs or webbing, which are spaced from the preferably recessed surface of the frame and which in use of the frame, after it is upholstered, serve to support seat and/or backrest cushions.

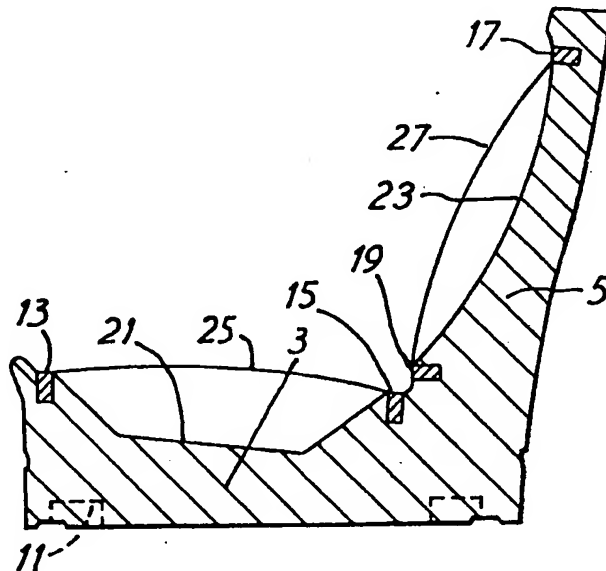


FIG. 1

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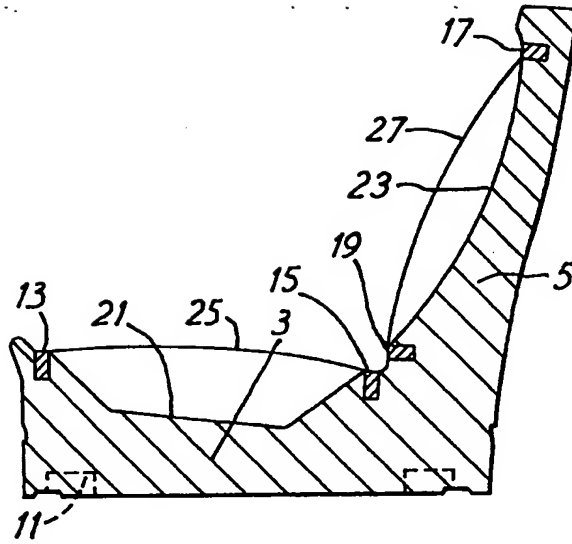


FIG. 1

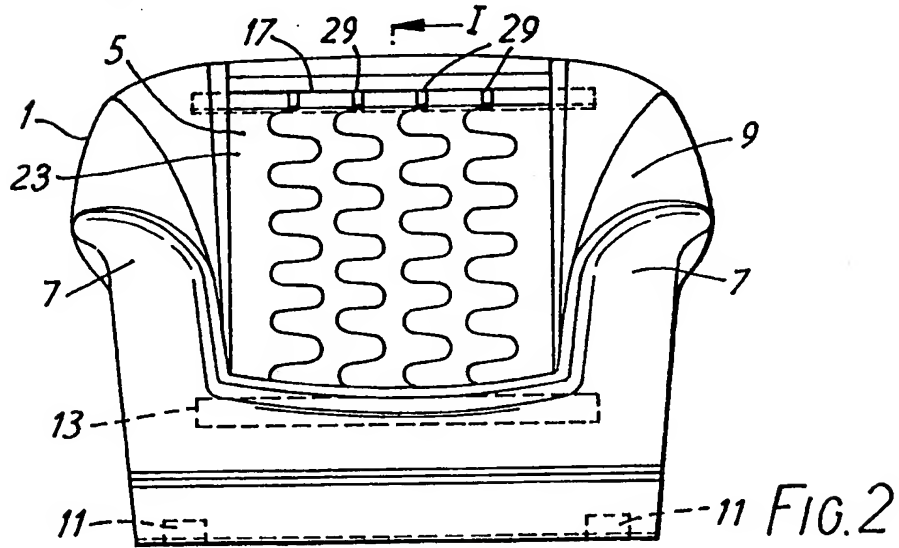


FIG. 2

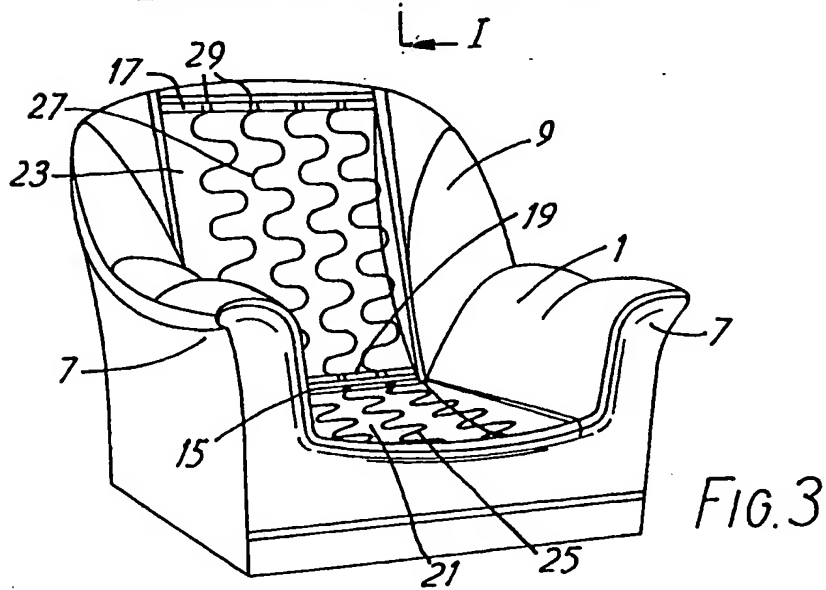


FIG. 3

## SPECIFICATION

**Improvements in self-supporting moulded furniture frames for upholstered furniture**

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This invention relates to self-supporting moulded furniture frames for upholstered furniture such as armchairs and settees. For many years now self-supporting moulded furniture frames and particularly such frames moulded in expanded polystyrene (eps) have been replacing traditional wooden frames in the manufacture of upholstered furniture. A problem with frames of this kind is that when upholstered and fitted with seat and, it may be, backrest cushions the degree of comfort afforded is noticeably less than that provided by furniture upholstered on traditional wooden frames on which springing is mounted. It has been proposed hitherto in United Kingdom Specification No. 1442424 to improve the comfort afforded by a moulded furniture shell by providing an opening in the seat of the shell and locating in the opening a complementary frame on which are mounted flat sinuous springs on which the seat cushion is carried.

It is an object of this invention to provide a self-supporting moulded furniture frame having improved means for enhancing comfort of upholstered furniture formed on said frame.

The present invention consists in a self-supporting moulded furniture frame, suitably for an armchair or settee, formed with rails located therein during moulding of the frame and to which are attached elongated flexible members spaced from the surface of the frame which in use of the frame after upholstering thereof serve to support a cushion or cushions.

Suitably the flexible members extend across a recess in the frame into which the flexible members are depressed, in use of the frame after upholstering thereof, by an occupant.

Preferably the rails are disposed in parallel and provided respectively at the front and rear of a seat portion of the frame. Additional parallel rails may be provided adjacent the top and bottom of a backrest portion of the frame.

Advantageously, the ends of the rails are embedded in arm portions of the frame to improve the anchorage thereof in the frame and/or wing. Suitably, the rails are of rectangular cross-section and coated on sides thereof with heat reactivating adhesive which during moulding of the frame secures the rails to the frame whilst sides of the respective rails which do not have an adhesive coating have the elongate flexible members attached thereto.

In one form of the invention the rails are provided in respective pairs in the seat and backrest portions of the frame, rails of each pair of rails having attached thereto respective ends of generally flat sinuous springs which

overlie a recess in the frame.

The invention will now be described by way of example, with reference to the accompanying drawings, in which:—

70 *Figure 1* is a sectional side elevation taken on the line I-I of *Fig. 2* of a self-supporting moulded armchair frame according to this invention;

75 *Figure 2* is a front elevation of the frame of *Fig. 1*, and

*Figure 3* is a perspective view of the frame of *Figs. 1* and *2*.

Referring to the drawings, a self-supporting armchair frame 1 is moulded from expanded polystyrene and comprises a seat portion 3, backrest portion 5, arm portions 7 and wing portions 9. The frame is mounted on castors (not shown) mounted on castor blocks 11.

In the moulding thereof there is incorporated into seat and backrest portions 3 and 5 of the frame, pairs of parallel rails 13, 15 and 17, 19, suitably made of wood, the rails 13 and 15 being located adjacent the front and rear of the seat portion and the rails 17 and 19 being located adjacent the top and bottom of the backrest portion. The ends of the rails are carried in the adjoining part of the frames, that is to say, in the case of rails 13 and 15 in the arm portion 7 and in the case of the rails 17 and 19 in the wing portions 9. Also, the rails are of rectangular cross-section and on sides thereof adjoining the expanded polystyrene of the frame are coated with a heat reactivating glue so that during the moulding process, the glue is activated and bonds the rails to the adjoining parts of the frame. The rails are thus securely anchored in the frame at their ends and along sides thereof.

The frame is formed in the moulding thereof between the rails of the pairs 13, 15 and 17, 19 with voids or recesses 21 and 23 over which are respectively disposed generally flat sinuous springs 25 and 27, the springs 25 having a shorter pitch than the springs 27 and thus being somewhat stiffer than the springs 27. The springs are slightly bowed outwardly away from, as the case may be, the seat or backrest portion of the frame. The ends of the springs are suitably secured to the adjoining rails at anchorage elements 29 which, suitably, are fitted to the rails prior to incorporation of the rails into the frame though they can alternatively be fitted to the rails after incorporation of the rails in the frame.

In use of the armchair upholstered on the frame described the springs 25 and 27 support seat and backrest cushions and when the armchair is occupied the springs are deflected into the frame recesses 21 and 23.

Instead of sinuous springs 25 and 27 webbing straps may be employed.

As compared with the known arrangement where a frame is separately formed with springs attached thereto and then located in

the seat portion of the furniture frame, it will be appreciated that an increased area of springing is afforded by the arrangement according to the invention. In the previously known arrangement all the sides of the frame carrying two springs had to be well spaced from the edges of the seat portion so that the furniture frame possessed adequate strength on all sides of the frame carrying the springs. With the arrangement of the invention because of the moulding of the rails into the furniture frame, a complete prefabricated frame is not required and virtually the full width of the frame seat portion is available to be overlaid with springing. A longer front to rear dimension for overlaying with springing is also made available as the rails can be located quite near the front and rear of the seat portion. It will be appreciated that for similar reasons a larger area of the backrest portion can be fitted with springs than would be the case if a prefabricated spring frame were located in the backrest portion. Also manufacturing simplification follows from no longer requiring to form prefabricated, jointed, frames to carry the springs.

With the arrangement according to the invention, the comfort that can be introduced is such that adequate comfort can be accomplished employing seat cushions of relatively reduced thickness. Another advantage is that with built-in rails, the frame from the upholsterers' point of view is closer to the traditional wooden frame in favour of which the upholsterer is prejudiced. Thus less resistance is likely to be encountered to the use by upholsterers of frames in accordance with the invention.

#### CLAIMS

1. A self-supporting moulded furniture frame, suitably for an armchair or settee, formed with rails located therein during moulding of the frame and to which are attached elongated flexible members spaced from the surface of the frame which in use of the frame after upholstering thereof serve to support a cushion or cushions.
2. A furniture frame as claimed in Claim 1, wherein the flexible members extend across a recess in the frame into which the flexible members are depressed, in use of the frame after upholstering thereof, by an occupant.
3. A furniture frame as claimed in Claim 1 or Claim 2, wherein the rails are disposed in parallel and provided respectively at the front and rear of a seat portion of the frame.
4. A furniture frame as claimed in Claim 1, Claim 2 or Claim 3, wherein the rails are disposed in parallel and provided adjacent the top and bottom of a backrest portion of the frame.
5. A furniture frame as claimed in any preceding claim, wherein the ends of the rails are embedded in arm portions of the frame to

improve the anchorage thereof in the frame and/or wing.

6. A furniture frame as claimed in any preceding claim, wherein the rails are of rectangular cross-section and coated on sides thereof with heat reactivating adhesive which during moulding of the frame secures the rails to the frame whilst sides of the respective rails which do not have an adhesive coating have the elongate flexible members attached thereto.

7. A furniture frame as claimed in any preceding claim, wherein the rails are provided in respective pairs in the seat and backrest portions of the frame, rails of each pair of rails having attached thereto respective ends of generally flat sinuous springs which overlie a recess in the frame.

8. A self-supporting moulded furniture frame, suitably for an armchair or settee constructed substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

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